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EXAMINER

LIANG, GWEN

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/625,518

Applicant(s)

WEISSMAN ET AL.

Examiner

GWEN LIANG

Art Unit

2172

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 2, 6, 10, 11, 17, 18, 21, 22, 26, 27, 29-31, 36, 38, 39, 43 and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Smiley (U.S. Patent No. 6,263,341).

With respect to claim 1, Smiley discloses a method ... comprising:

the computer accessing a definition of the system, the definition defining a schema for use by the system (col. 4 lines 20-30, "The OBJECTS include ATTRIBUTES 20, which are technical definitions of data modeled in some computer application. ATTRIBUTES 20 are elementary data definitions such as product name, customer number, employee number, and other data which are of interest to the enterprise. Another OBJECT 12 is ENTITY 21, which is a logical collection of ATTRIBUTES 20. ENTITY 21 CONTAINS 22 ATTRIBUTE 20.

Art Unit: 2172

CONTAINS relationship 22 documents the one-to-many relationship that each ENTITY 21 has with the attributes it contains.”);

the schema defining a set of tables, a set of columns that correspond to the set of tables, and a set of relationships between the tables of the set of tables (col. Lines 8-11, “Alternatively, the attributes of OBJECT 12 may be configured as other OBJECTS, which are logically related to OBJECT 12 via a RELATIONSHIP entity 14.”); (col. 3 lines 27-33, “RELATIONSHIP entity 14 preferably contains attributes or fields which record the name of RELATIONSHIP entity 14 represented by characters, the names or identifiers, and types of OBJECTS 12 between which this relationship holds, a sequence number to ensure the uniqueness of RELATIONSHIP entity 14, and the name of a METHOD entity 16 which implements RELATIONSHIP 14.”); (col. 4 lines 25-32, “Another OBJECT 12 is ENTITY 21, which is a logical collection of ATTRIBUTES 20. ENTITY 21 CONTAINS 22 ATTRIBUTE 20. CONTAINS relationship 22 documents the one-to-many relationship that each ENTITY 21 has with the attributes it contains. This relationship along with the ATTRIBUTE name, serves to uniquely identify each ATTRIBUTE.”).

the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns (col. 6 line 66 – col. 7 line 3, “The OBJECTS for an operational system's information repository preferably include ATTRIBUTES (not shown), which contain the data of interest to the enterprise. OPERATIONAL METHODS are the existing application programs that display or update the operational data.”); and

Art Unit: 2172

the computer using the definition to generate the set of tables (col. 13 lines 52-55, "This data can then be used to generate the physical implementations represented by the application data tables 122.").

Claim 2 is rejected for the reasons set forth hereinabove for claim 1 and furthermore Smiley discloses a method wherein the set of tables includes a first table and a second table, wherein the first table includes a first column, wherein the second table includes a second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain (col. 6 lines 57-65, "FIG. 3 depicts application systems which function to support an enterprise. These application systems are comprised of ATTRIBUTES 20 collected into ENTITIES 21. These ENTITIES 21, such as customer 60, account management 61, returned material 62, sales order history 63, ship 64, product database 65, world wide price list 66, and inventory 67, are joined by relationship connections 68-73 which represent operational or business rules, to form an operational system network.").

Claims 6, 26, 27 are rejected on grounds corresponding to the reasons given above for claim 1.

Claim 10 is rejected for the reasons set forth hereinabove for claim 1 and furthermore Smiley discloses a method wherein the definition defines a set of source system extraction operations, wherein the set of source system extraction operations are for extracting data from a source system and for manipulating the data for populating the database, and wherein the set of source system extraction operations correspond to the schema definition (col. 2 lines 50-53, "FIG. 4 is a diagram of an application for accessing data from a number of data sources located on diverse computer platforms employing the information repository scheme of the preferred

Art Unit: 2172

embodiment,"); (col. 5 lines 49-52, "INFORMATION 37 is a collection of ATTRIBUTES 20 and DATA FIELDS 30, possibly from many sources, that describes the enterprise or some function of the enterprise."); (col. 5 lines 59-61, " Links 38-40 describes the relationship between INFORMATION 37 and DATA FIELD 30, COLUMN 25, and EXTERNAL SOURCES 36, respectively."); (col. 10 lines 40-49, " OBJECT definitions for the decision support system information repository may include OPERATIONAL DATA. OPERATIONAL DATA are data elements in operational data bases that are of interest to their systems. OPERATIONAL METHODS are the existing application programs that display or update the operational data accessed by the decision support system. These may be used as part of the extract process, as a front-end to a graphical user interface, or for ultimate update of the operational data in the originating data base."); (col. 10 lines 51-55, "DSS METHODS differ from OPERATIONAL METHODS in that they are unique to the decision support system (DSS), and which are used to extract or manipulate the operational data in the DSS data base").

Claim 11 is rejected on grounds corresponding to the reasons given above for claim 10.

Claim 17 is rejected for the reasons set forth hereinabove for claim 1 and furthermore Smiley discloses a method wherein the definition includes a user interface definition for to querying the database and for presenting results, the user interface definition corresponding to the schema definition (col. 7 lines 38-40, "These METHOD entities 14 can then be used as a front-end to a graphical user interface or may be executed stand-alone to obtain the desired data."); (col. 10 lines 46-49 " These may be used as part of the extract process, as a front-end to a graphical user interface, or for ultimate update of the operational data in the originating data base."); (col. 13 lines 38-43, "A user access services 118 provide repository users with the ability

Art Unit: 2172

to retrieve, browse, and update information repository data in text format. User access service 118 also functions as a front end to any graphical user interface which may be used for a graphical representation of the data structure or network of information repository 10.”); (col. 5 lines 9-13, “TRANSLATES TO 28 is the basis for navigation from the data abstraction level to the data implementation level, and is key to the process of querying a data MODEL 23 to view data it represents.”); (col. 7 lines 28-30, “Another example is QUERY, which permits a user to find an instance of information in a relationship given the other information and the relationship name.”); (col. 12 line 64 – col. 13 line 1, “Operational data acquisition is further supported via query services 105 in conjunction with browsing and retrieval services 102 and 103. Query services 105 provide access to the operational data represented in information repository 10.”).

Claims 18 29, 36 are rejected on grounds corresponding to the reasons given above for claim 17.

Claims 21-22, 30-31, 38-39 and 43-44 are rejected on grounds corresponding to the reasons given above for claims 1-2.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 5, 23, 25, 32, 34, 40, 42, 45 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Bapat, (U.S. Patent No. 5,295,256).

Art Unit: 2172

Claim 3 is rejected for the reasons set forth hereinabove for claim 1 and furthermore Smiley teaches a method wherein the definition defines that the first table relates to the second table by a many to one relationship (col. 3 lines 21-23, "Therefore, there may exist one-to-one RELATIONSHIPS, one-to-many RELATIONSHIPS and many-to-one RELATIONSHIP."). However Smiley does not explicitly teach ... generating a foreign key column ...

Bapat teaches generating a foreign key column (Abstract, "Object instances are mapped to entity tables with object instances represented by entity records. Simple attributes are mapped to primitive typed attribute columns and class valued attributes are represented by foreign keys into entity attribute tables. Derived attributes are represented by joins of the parent and child entity records."); (col. 7 lines 33-38, "Thus, this is considered a many to one (or N to 1) relationship as designated by the N and the 1 adjacent the arrows. This relationship can be represented by the class schema of FIG. 5 wherein class 80 is linked via a relationship 82 to class 84.").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate foreign key generation as disclosed by Bapat into the table generation as taught in Smiley in order to handle the many-to-one relationships. One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

Claim 5 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach that one or more columns are automatically populated from the one or more columns ...



Bapat teaches that one or more columns are automatically populated from the one or more columns (col. 12 lines 50-55, "Next, at 434 the translator constructs "INSERT INTO class.sub.-- table" command with the insertion of the object identifier that will be generated, into the object identifier column of the current class in order to insert an actual instance of the current class into the table.").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate column data population as disclosed by Bapat into the table generation as taught in Smiley in order to automate the insertion of an actual instance of the current class into the table as stated in Bapat col. 12, lines 54-55. One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

Claims 23, 32, 40, 45 are rejected on grounds corresponding to the reasons given above for claim 3.

Claims 25, 34, 42, 47 are rejected on grounds corresponding to the reasons given above for claim 5.

5. Claims 4, 7, 24, 33, 41 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Bachman et al., "Bachman " (U.S. Patent No. 5,249,300).

Claim 4 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach ... many to many relationship, ... generating an associative table ... and ... a unique value ...

Bachman teaches ... many to many relationship, ... generating an associative table ... and ... a unique value ... (col. 10 lines 58-63, "In the preferred system, attributes may be created independent of entities. Using the partnership set protocols described in U.S. Pat. No. 4,631,664, relationships may be one-to-one, one-to-many, or many-to-many, depending upon the type and complexity of the system or model created."); (col. 9 lines 53-57, "In the preferred embodiment of the system, unique keys may represent one or more attributes, partnership sets, or a combination of both attributes and partnership sets. Keys may be primary, alternate, or foreign.").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the use of associative table with a unique value as disclosed by Bachman into the table generation as taught in Smiley in order to establish a recursive relationship or a relationship with another entity or partnership set [herein many-to-many relationship is inherent] (col. 10 lines 1-3). One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

Claim 7 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach a transaction type column.

Bachman teaches a transaction type column (col. 23 line 68 – col. 24 line 6, "Business transaction design data may correspond to transaction -related information, such as rules of transactions which operate on entities, attributes, and relationships. These rules may include processing algorithms, and may be stored internal to a computer system. User data may then be transformed in accordance with the transaction design data .").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the a transaction type column as disclosed by Bachman into the table generation as taught in Smiley in order to include the design for business transactions in an information management system.

One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

Claims 24, 33, 41, 46 are rejected on grounds corresponding to the reasons given above for claim 4.

6. Claim 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Skinner et al., "Skinner" (U.S. Patent No. 6,085,198).

Claim 8 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach a date column.

Skinner teaches a date column (col. 19 lines 39-41, "MetaSchema 500 comprises a string data structure, "mySchemaVersion," that stores schema version information such as a version date .").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a date column as disclosed by Skinner into the table generation as taught in Smiley in order to be able to store dates in the database, which is a common need in any database management system. One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Rosensteel, Jr. et al., "Rosensteel" (U.S. Patent No. 6,167,405).

Claim 9 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach a source system key column.

Rosensteel teaches a source system key column (col. 27 lines 47-56, "during the design phase, generating and storing in the repository, information defining reference links between each target data warehouse table and the source tables from which instances must be extracted, identification of the source databases and target database, reference links between corresponding portions of the source and target tables, and identification of those warehouse request entities related to a number of target tables to be populated by a particular warehouse request;"); (col. 19 lines 41-44, "It also returns the database key of the 'Source Agent Server for the 'Source database in argument lngAgentId.").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a source system key column as disclosed by Rosensteel into the table generation as taught in Smiley in order for the administrator to perform a series of data model extract and merge operations on the source databases to obtain entities, relationships and attributes which are relevant to the particular target data model design (col. 10 lines 59-63). One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

8. Claims 12, 13, 14, 15, 16, 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Koss (U.S. Patent No. 5,272,628).

Claim 12 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach a method comprising: ... creating a set of aggregate tables ...; and populating the set of aggregate tables.

Koss teaches a method comprising: ... creating a set of aggregate tables ... and populating the set of aggregate tables (col. 2 lines 31-34, "The present invention contemplates a method and system which allows the consolidation or aggregation of data in disparate tables into a single aggregate table which summarizes that data."); (col. 2 lines 60-64, "In contrast, the present invention provides an improved method and system wherein source tables of virtually any size and configuration may be combined in an aggregate table based on user-defined, or automatically generated criteria."); (col. 4 lines 60-64, "In the preferred practice of the present invention, a mapping list is used to map source table row and columns to corresponding destination output (or aggregate) table row and columns."); (col. 7 lines 21-23, "For example, to average values, two tables can be used, one for holding a cumulative sum, and one to contain the count of elements contributing to the sum ....").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of creating and populating aggregate tables as disclosed by Koss into the table generation as taught in Smiley because occasionally, it is desirable to combine the data contained in multiple tables into a single master table [equivalent

Art Unit: 2172

to an aggregate table] (col. 1 lines 31-32). One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

Claims 13, 14, 15, 16 and 28 are rejected on grounds corresponding to the reasons given above for claim 12.

Claim 19 is rejected on grounds corresponding to the reasons given above for claims 10, 12 and 17.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), and further in view of Tse et al., "Tse" (U.S. Patent No. 6,282,544).

Claim 20 is rejected for the reasons set forth hereinabove for claim 1. However Smiley does not explicitly teach a datamart... a star schema ...fact tables ... and ...dimension tables.

Tse teaches a datamart... a star schema ...fact tables ... and ...dimension tables ... (col. 1 lines 21-32, "One of the first steps in building a successful data mart is to correctly identify the different dimensions and the fact set within a business structure. This is often known as dimension modeling. Each dimension represents a collection of unique entities that participate in the fact set independent of entities from another dimension. The fact set usually contains transactional data where each transaction (or record) is identified by a combination of entities one from each dimension. FIG. 1 shows a star schema for a supermarket business where the star schema is the outcome of the dimension modeling process.");

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a datamart, a star schema, fact tables and dimension tables as disclosed by Tse into the database system as taught in Smiley because a data mart [wherein a star schema, fact tables and dimension tables are common components] is a database, or collection of

Art Unit: 2172

databases, designed to help managers make strategic decisions about their business (col. 1 lines 8-11).

One of ordinary skill in the art would be motivated to make the aforementioned combination with reasonable expectation of success.

10. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), further in view of Bapat, (U.S. Patent No. 5,295,256), and further in view of Koss (U.S. Patent No. 5,272,628).

Claim 35 is rejected on grounds corresponding to the reasons given above for claims 34 and 12.

11. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smiley (U.S. Patent No. 6,263,341), further in view of Koss (U.S. Patent No. 5,272,628), and further in view of Bachman et al., "Bachman " (U.S. Patent No. 5,249,300).

Claim 37 is rejected on grounds corresponding to the reasons given above for claims 33 and 12.

Art Unit: 2172

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GWEN LIANG whose telephone number is 703-305-3985. The examiner can normally be reached on 9:00 A.M. - 5:30 P.M. Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KIM VU can be reached on (703) 305-4393. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

G.L.  
July 26, 2002

  
SHAMD AL ALAM  
PATENT EXAMINER